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Field Report 17

THE POULTRY MARKETING SYSTEM OF SOUTH VIETNAM

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FOREWORD

This study is one of a series of marketing studies conducted by the U.S. Department of Agriculture in cooperation with the U.S. Agency for International Development and the Ministry of Land Reform, Agriculture, Fishery and Animal Husbandry Development of the Government of South Vietnam.

This marketing series is part of a still larger USDA Economic Research Service Vietnam project. The first phase of the larger project was a review of Vietnam's 5-Year Rural Economic Development Plan, with a report published in December 1971. Other phases being completed now are a series of demand and price studies and a linear programming model to study production-distribution relationships for farm commodities.

The purpose of the several series of studies is threefold. The first is to develop a body of economic information from readily available sources for immediate use by the Ministry and USAID Mission in making decisions regarding development of Vietnam's agricultural sector. Secondly, the research methodology used and the economic information developed are to provide a basis for work by the recently-established Directorate of Agricultural Economics. Finally, it is expected that the participation of members of the Ministry staff in the conduct of these studies, together with any specialized training associated with the project, will acquaint them with the research procedures followed so that the analysis can be continued and improved in the future.

The marketing series, of which this report is a part, provides detailed descriptions of marketing systems for several major farm products, supplies marketing input data required for the production-distribution model mentioned above, and assesses the need for changes in the marketing systems. Assessment of the need for change was based primarily upon (1) the relationship of the costs incurred in providing the services required to move farm commodities from farms to consumers and the marketing charge, or margin, for these services; and (2) the extent to which the existing marketing systems provide the services currently required or expected to be demanded in the near future by growers or consumers. Covered in the reports are livestock products, oilseed processing, sugarcane and raw sugar processing, swine, poultry, horticultural crops, grains, and transportation.

Personnel of the Marketing Economics Division of USDA's Economic Research Service had prime responsibility for the studies under Participating Agency Service Agreement No. SA/VN(AJ)103-72. However, many others also deserve recognition for their cooperation and assistance, including other Ministries of the Government of Vietnam; the farmers, merchants, and others in Vietnam's private sector; and the staff of the U.S. AID Mission to Vietnam. Particularly helpful in the poultry study were: J. Sutton, consultant to the Office of the Associate Director of Food and Agriculture, USAID; Shelby Robert, USDA/PASA adviser with ADFA, USAID; Bui Van Tro, formerly with ADFA, USAID; and Ng Gia Hai, Vietnam Agricultural Economic and Statistical Service.

- William A. Faught
Project Coordinator

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SUMMARY AND CONCLUSIONS

The program initiated in 1967 to increase commercial poultry production in Vietnam has been successful. However, the success of developing a viable poultry industry in Vietnam is dependent on a number of factors, including (1) an efficient poultry marketing system, and (2) the key factor, producing feed grains domestically in adequate quantities at reasonable prices.

This report describes and analyzes existing marketing practices for poultry, including ducks; assesses the current marketing problems associated with each; and provides recommendations and suggestions for improvement. The information was gathered in a 6-week in-country tour (October-November 1971) sponsored by the U.S. Agency for International Development to observe marketing practices and interview government officials, producers, middlemen, and retailers in the poultry marketing system.

Chicken Eggs

The production of eggs is concentrated in the Delta, where flocks vary from 5 to 500 birds. The larger scale commercial operations are concentrated in provinces surrounding Saigon, where flocks vary from 5,000 to 40,000 birds.

Primary costs in table egg production are feed and cost of the chick. The estimated cost of feed is 83 percent of total production costs, and the cost of the chick is 7 percent. Virtually all feed required for the poultry industry is imported.

Currently, market eggs are sold fresh, either loose or on flats, and visually graded for size but not for quality. Wholesalers and retailers have limited physical capacity and continued population growth in urban areas will require multiplication of present small scale units, unless larger scale units are introduced.

The high percentage of retail price absorbed by producers reflects the lack of processing, packaging, and merchandising in the current distribution system. The producers' share of retail price is approximately 83 percent when the initial sale at the farm is for the Saigon market.

Costs of introducing egg handling and grading in Vietnam are of concern to consumers, producers, and egg handlers. The estimated cost of egg handling for a 12 case per hour plant operating at 100 percent capacity (8 hours per day, 300 days per year) is VN\$.3 per egg. At 50 percent capacity the cost increases to VN\$.5 per egg. Packaging is excluded since consumers buy table eggs in small quantities and the added cost would be significant.

Chicken for Meat

Although the Delta produces the largest number of chickens, the larger commercial flocks are concentrated in the provinces near Saigon. The largest cost items for producing commercial broilers are feed and cost of the chick, accounting for 55 percent and 31 percent of production costs, respectively.

Chickens are generally sold live due to the lack of refrigeration; also consumers suspect dressed poultry may be diseased. The existing distribution system is such that larger broiler flocks (3,000 birds) cannot be marketed at one time. Buyers normally purchase 200-250 broilers at a time from an individual producer. Thus, when a flock reaches market weight (approximately 9 weeks) it takes the producer an additional 4 to 5 weeks to market all his broilers.

When the sale of chickens at the farm is for the Saigon market, larger producers near the market absorb 77 percent of retail price, while other chicken producers receive 74 percent of retail price. The relatively low share of retail price absorbed by market participants reflects that few market services are provided.

The cost of introducing chicken processing is of concern to consumers, producers, and processors. The estimated cost of processing in a 600 broiler per hour plant is VN\$10.7 per kg. when the plant operates 8 hours per day, 350 days per year. However, production costs would be reduced approximately 7 piasters per kg. because producers would be able to market larger flocks at 9 weeks. Institutional outlets and the military offer the greatest initial potential for processed broilers, as they have improved handling facilities for dressed poultry.

Ducks

The production of ducks and duck products is concentrated in the Delta, which accounted for 78 percent of the number of ducks in 1970. Raising ducks is closely related to the rainy season and the rice harvest season when feeding costs are minimal.

Although the producers' share of retail price is a relatively high 61 to 73 percent, the marketing margin is higher for ducks than for chickens since most ducks are marketed dressed. The high market value of duck feathers, VN\$150 to VN\$200 per kg., encourages dealers to dress ducks.

An estimated 25 percent of live ducks handled by commission brokers and wholesalers are purchased by duck feeder operators in Cholon. These ducks are forced fed broken rice for 7 days to be fattened for roasting and, at the end of this period, dressed for distribution to restaurants, hotels, and butchers.

The existing marketing system for ducks is capable of handling large flocks (3,000 to 6,000 birds). The industry does grade for size, although uniform standards have not been established. Dressed ducks are not inspected and refrigerated facilities are virtually non-existent.

During the hatching season, fertile eggs are sold to rice hull hatcheries. Most duck eggs for table use are sold fresh, while some are made into specialty items such as salted eggs. Fresh eggs are generally packed into large baskets and handled in this manner through the market system until purchased by the consumer. The percent of retail price absorbed by producers of duck eggs is 81 to 88 percent.

The problems affecting improvement of the existing marketing system are:

1. Poorly coordinated market channels through which larger broiler flocks are assembled and distributed to consumers.
2. Need for improvement in the flow of inputs for agricultural production and marketing.
3. Lack of market information flows among market participants.
4. Absence of government poultry marketing regulations to encourage grading, inspection, and minimum handling requirements.
5. Limited agricultural economic research needed for decision-making.

Since large scale and efficient broiler operations are not feasible in Vietnam as long as existing marketing practices are followed, it is recommended that a 600 broiler per hour processing plant be constructed near Saigon.

The Government of Vietnam (GVN) and U.S. Agency for International Development must continue to encourage domestic feed grain production, as this is essential to sustaining a healthy and viable poultry industry in Vietnam. Also, the GVN should avoid frequent changes in regulated import levels of poultry breeder stocks, as it causes wide fluctuations in the supply of poultry products. This, in turn, enhances uncertainty in the industry.

The feasibility of establishing a market news service in the Ministry of Agriculture should be examined.

A study should be conducted to analyze the costs of initiating government market regulations and the resulting implications in terms of added costs and returns for producers and existing market participants.

Vietnam's Agricultural Economics and Statistics Service should continue to improve data collection needed for agricultural economic analysis.

THE POULTRY MARKETING SYSTEM OF SOUTH VIETNAM

INTRODUCTION

In 1967, the U.S. Agency for International Development (AID) helped initiate a program to increase commercial poultry production in the private sector of the Vietnamese economy. By 1970, the farm value of poultry and poultry products was estimated at VN\$4.48 billion at 1964 prices, or 10.7 percent of the total value of all agricultural production.

Continuous successful development of a viable poultry industry in Vietnam is dependent upon a number of factors, however, including an efficient poultry marketing system.

The major objectives of this report, then, are to describe and analyze existing marketing practices for poultry, including ducks; assess current marketing problems; and recommend improvements and areas for future investigation. The report is based on a study conducted by the U.S. Department of Agriculture cooperating with AID and the Ministry of Land Reform, Agriculture, Fishery and Animal Husbandry Development, Vietnam, and includes information gathered in a 6-week in-country tour (October 17 to November 29, 1971) to observe the marketing practices and to interview government officials, producers, middlemen, and retailers in the poultry marketing system. When available, published material and data related to the livestock industry were also examined.

In this report, the poultry enterprises are divided as follows: (1) chicken eggs, with major emphasis given to market eggs; (2) chicken for meat, including the traditional backyard flocks, commercial broiler flocks, and fowl; and (3) ducks for meat and duck eggs. The term commercial producers will refer to those farmers who specialize in raising improved breeds of laying hens and/or broilers with the primary purpose of production for the market. Noncommercial refers to farmers with local or cross breed chickens maintained as traditional backyard flocks.

CHICKEN EGGS

Total Egg Production

Quantity and Location of Production

Data on egg production and the Vietnam poultry industry in general is inadequate, both in terms of the period covered and accuracy. Estimates of annual egg production are available for recent years, but monthly estimates are not, and cannot be, estimated. In 1970, the most recent year for which production figures are available, estimates of egg production based on

different sources varied from 221.7 to 630.8 million eggs. The low estimate was computed by the Agricultural Economics and Statistics Service (AESS) from reported number of chickens, while the high estimate was based on a special survey conducted in 1970 by AESS. The special survey data implied that the average annual rate of lay was 220 eggs per bird. At best, this rate of lay could be attained by the most efficient commercial producers, but not in the noncommercial sector. Available information indicates that the annual rate of lay for local breeds is 60 to 65 eggs per bird, and local breeds account for some 80 percent of the laying flock.

The 1970 livestock survey indicated 15 percent of the total number of chickens on farms were layers. Based on the number of chickens reported for 1970 (19.26 million head), and assuming 15 percent of the chickens would be laying at the previously defined rates, estimated production for 1970 was 265.8 to 277.3 million eggs (Table 1). Obviously, the estimates may be over simplified since the accuracy of estimated egg production is also dependent on the number of chickens reported. The accuracy of reported chicken numbers is questionable.

Even with acceptable estimates of total egg production, the number of eggs consumed on the farm and the number of hatching eggs produced cannot be determined. Thus, the number of eggs entering the market is virtually unknown.

Egg production is concentrated in the southern region of Vietnam. Many small producers are located in the Delta or western part of the southern region (particularly in Dinh Tuong, Long An, and Kien Giang provinces). In this area, backyard flocks will average 5-20 birds while commercial laying flocks average 200 to 500 birds. Large scale commercial operations are concentrated in provinces surrounding Saigon, with flock sizes varying from 5,000 to 40,000 birds.

Hatching Operations

In 1971, approximately 55 commercial hatcheries operated in Vietnam with a capacity to produce between 1.2 and 1.5 million chicks per month. During the in-country tour it was evident that this capacity was not fully utilized. Whether this was a seasonal characteristic was not determined. The typical commercial hatchery maintains imported parent stock, uses modern hatching techniques, and generally markets day-old chicks directly to commercial producers. In many cases hatchery operators also maintain broiler and market egg laying flocks. The reported cost of labor, egg, and depreciation to hatch a chick varied from VN\$60 to 70. The average price received per chick was:

	<u>VN\$</u>
Broiler chick	140
Sexed pullets <u>1/</u>	250 for brown egg layers
	160 for white egg layers
Cockerels	75

1/ Consumers prefer brownshell eggs to whiteshell eggs, which accounts for price differences between pullets for brown and white egg layers.

Table 1.--Estimated production of chicken eggs in South Vietnam, 1966-1970

Year	Number of chickens	Computed egg production by AESS	AESS special livestock survey	Estimated 1/ egg production I	Estimated 2/ egg production II
	Thousand			Million	
1966	19,980.0	N/A	N/A <u>3/</u>	275.7	287.7
1967	19,657.0	N/A	N/A	271.8	283.1
1968	20,005.0	N/A	N/A	276.1	288.1
1969	20,048.0	243.1	845.5 <u>4/</u>	276.7	288.7
1970	19,260.5	221.7	630.8 <u>4/</u>	265.8	277.3

1/ Based on the number of chickens reported each year and assuming 12 percent of the chickens laying 60 eggs per year (local breeds), and 3 percent laying 220 eggs per year (improved breeds).

2/ Based on the assumption that the local breeds lay at the rate of 65 eggs per year.

3/ Not available.

4/ Lunar year basis.

A large number of traditional or rice hull hatcheries also exist in Vietnam. These hatcheries do not require capital investment for mechanical equipment since eggs are placed in barrels insulated with rice hulls; the heat of the developing embryo is sufficient to incubate the fertile eggs. The total capacity of rice hull hatcheries is unknown, as they are labor intensive and can rapidly adjust capacity to market conditions. Each hatchery normally hatches both chicks and ducklings, the proportion of each depending on the season. These hatchery operators normally pay farmers 2 piasters per egg above the fresh market price for fertile eggs. They candle the purchased eggs to determine fertility, and sell the unfertile eggs for the fresh market. A preference appears to exist for fertile eggs from improved or cross breed flocks. Chicks are sold either directly to noncommercial producers at the hatchery or in the public marketplace. Day-old chicks were selling for VN\$25 to 40 each. The total cost of hatching a chick is estimated at VN\$23 per chick. Hatchability was reported to be as high as 75-80 percent.

Production Costs

A commercial producer's largest cost item in producing market eggs is feed. Most feed ingredients are currently imported; in addition, the GVN has recently pursued a high corn price policy to encourage domestic feed grain production. The price of mixed feed ranged from VN\$960/20 kg. in Saigon to VN\$1040-1050/20 kg. in Can Tho, Dalat, and Nha Trang. The difference in price between Saigon and Can Tho is made up by the following costs:

	<u>VN\$/20 kg.</u>
Transportation	40
Labor	10
Local feed dealer	30

Feed costs in the western provinces of the Delta were reported at VN\$900-1000/20 kg., apparently due to the availability of lower priced Cambodian corn.

The total cost of producing an egg varies according to size of operation, and averaged VN\$12 to 13/egg. The current production costs for an average commercial operation have been estimated as follows:

Table 2.--Egg production costs, S. Vietnam

	<u>VN\$/egg</u>	<u>Percent</u>
Feed	10.78	83.4
Vaccination/Medication .....	.36	2.8
Labor .....	.36	2.8
Building and Equipment .....	.38	2.9
Cost of Chick .....	.96	7.4
Utilities .....	.08	.6
Total	<u>12.92</u>	<u>100.0</u>

The salvage value of old layers is high in Vietnam. Old layers sell for VN\$350/kg., or about VN\$875 per hen considering an average market weight of 2.5 kg. Producers reported this return virtually offsets the cost of purchasing a chick and raising it to laying age. However, as the supply of alternative sources of animal protein in Vietnam increases, the salvage value of hens may decline. Excluding the purchase price of a chick (VN\$.96/egg) and the estimated feed cost of raising it to laying age (VN\$2.4/egg), the net production cost per egg is VN\$9.6/egg.

Value of Production

The published price series on chicken eggs is the reported market price. Data on prices received by farmers are not available.

Egg prices in Vietnam have increased rapidly from VN\$2.8/egg in January 1965 to VN\$25.2/egg in December 1970 (Table 3). However, the Saigon egg prices reported for the first 6 months of 1971 have been decreasing from VN\$26.0 in January to VN\$18.5 per egg in July. The reduction in price received by farmers for market eggs, together with higher feed costs, has caused estimated producer returns above production costs to decline to approximately 30 to 35 percent in recent months.

Marketing Distribution System

Marketing Channels

Given the time and data constraints and the complexity of the marketing system, it was not practical to develop complete channel maps to illustrate the flow of market eggs through the distribution system. At times, it was virtually impossible to distinguish among the various market participants since they may perform a number of functions or bypass certain institutions in the market.

In lieu of channel maps, the following description and analysis illustrates some of the more basic patterns of the market egg distribution system. In general, the flow of eggs from large-scale producers to the Saigon market follows this route: farmer-wholesale assembler-retailer. An estimated 10 percent of all fresh eggs are sold by farmers directly to consumers at the farm, while 90 percent are sold to wholesale assemblers. Reportedly it is customary for a producer to deal with one or two buyers.

The producers usually do not perform any significant marketing functions. Some small commercial producers may deliver their eggs to wholesalers, and some grade eggs by size. However, these functions are generally performed by the wholesaler. The wholesale assembler collects and transports the eggs from the farm to Saigon, grades the eggs by size (large, medium, and small), and distributes the product to a large number of retailers. Wholesalers deliver to large retailers at the marketplace daily, while small retailers buy at the

Table 3.--Prices of chicken eggs at provincial markets, 1965-1970

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Avg.
	VN\$ / 10												
Vietnam													
1965	28	28.5	28	27.5	29.5	31.5	33	34	35	41.5	44	47	32.5
1966	51	51.5	49	50	49.5	53.5	57	62.5	63	64.5	65.5	66	57
1967	70	71.5	71	69	70.5	73	78.5	84.5	86.5	90	93	95	82
1968	95	96	118	92	103	106	112	117	126	139	140	135	116
1969	131	128	143	142	143	146	150	146	146	149	173	165	149
1970	162	168	169	185	205	206	214	222	230	248	252	252	209
1971													
Saigon													
1965	31.5	31	30.5	33	36	35	37.5	37	42	46.5	49.5	50	38
1966	53	48	48.5	50	61	57.5	79	78.5	80	81	82.5	82.5	67
1967	74	68	75	70	76	79	98	105	107	109	110	105	89
1968	102	--	120	115	132	122	142	150	152	162	155	148	136
1969	140	140	140	140	137	137	135	137	137	145	165	160	143
1970	162	162	165	192	210	225	237	240	265	277	275	260	222
1971	260	250	230	242	210	195	185						
Southern Region													
Western Part													
1965	26	25	24.5	24	26	27.5	29	29.5	34.5	39.5	40.5	41	29.4
1966	43	44.5	42	44	45.5	50.5	52	59	58.5	59	60	59	52
1967	58	60.5	58	59	60	67.5	73	81	85	90	88	87	73
1968	85	82	84	78	83	91	96	107	119	128	136	130	102
1969	122	111	118	112	117	125	128	123	124	130	145	147	125
1970	144	146	147	157	179	190	203	208	221	240	239	241	193
1971													
Eastern Part													
1965	29.7	28.5	28.5	29	30.5	32	34.5	36	36	46.5	48.5	56.5	33
1966	55.5	55.5	54.5	53.5	53.5	54.5	61	68	64.5	67.5	70.5	72	61
1967	77	78	78	75.5	78	76	83.5	84.5	86.5	89.5	95	98	83
1968	99	110	126	108	121	126	123	124	129	142	132	138	125
1969	138	197	146	136	140	140	142	139	143	152	158	155	146
1970	152	151	165	184	201	202	210	220	219	253	260	256	207
1971													
Central Lowlands													
1965	27.5	30	29	29	31	32.5	29	30	32.5	36	39	41.5	31.5
1966	51.5	53	52	53	52	55	55	55	67.5	64	61.5	62.5	58
1967	83	85	87	83.5	83.5	75	84	89	83	80	86	88	88
1968	97	--	110	110	120	120	130	130	136	142	142	144	125
1969	145	150	155	171	167	161	168	164	163	160	174	173	165
1970	175	199	187	199	216	210	211	227	227	232	244	246	214
1971													
Central Highlands													
1965	33	33.5	35	34.5	34	42.5	51.5	50	45	55	62	68	41
1966	66.5	69	63.5	64	65	65	80	80	80	90	87.5	87.5	75
1967	90	72.5	85	85	90	90	87.5	97.5	--	123	128	140	114
1968	126	--	132	138	150	132	145	142	147	185	140	142	138
1969	142	160	180	181	178	181	191	185	179	176	213	210	186
1970	202	200	205	234	256	245	252	255	274	283	283	280	247
1971													

Source: Vietnam Agricultural Economics and Statistics Service.

wholesale establishment. Some wholesalers also distribute to food service firms, restaurants, and hotels.

Most eggs are sold to consumers by retailers at the public marketplaces in Saigon. Large retailers are likely to rent a stall at the marketplace and deal mainly in market eggs. Few eggs are retailed outside the marketplace, as retail food stores are not common in Vietnam. Retailers generally dispose of the lowest quality eggs by selling to bakeries. It appears some change may be taking place, as a small number of egg producers have been able to bypass the wholesalers and deliver directly to a few retailers.

Facilities for handling eggs in the Saigon market and in other markets are poor. Eggs are handled loose or on flats and, due to a lack of refrigeration, are not stored properly either by farmers or dealers. They are not generally graded for quality and the marketing process may take up to a week.

It appears that wholesalers have limited capacity in physical facilities, and that retailers have space limitations. Thus, continued population growth in Saigon will require a multiplication of present small-scale units, unless larger-scale units are introduced at the wholesale and retail levels.

Differences Between Saigon and Provincial Markets

The flow of eggs in the provinces follows one of two routes: (1) producer-consumer, or (2) producer-retailer-consumer. Small producers with backyard flocks generally sell direct to consumers at the farm or the central marketplace. Commercial producers generally deliver their product to the retailers in the marketplace. Provincial retailers (mostly women) are not likely to specialize in eggs alone, but will also handle chickens for meat, ducks, and duck eggs. These same retailers may also supply food service firms, schools, and restaurants, but the largest proportion of market eggs are sold to consumers in the marketplace. In the Delta, it is not uncommon for the market woman to sell retail to one consumer and wholesale to another. Some retailers have prior arrangements with wholesalers in Saigon and will ship eggs every 2 or 3 days, thus performing the function of country assembler. Adequate data was not available to determine the geographical movements of market eggs.

Marketing Margins

A critical question is the markup in the price of eggs as they move from the producer to the consumer in Vietnam. The following tabulation illustrates the estimated percentage of retail price absorbed at each level during November 1971. These estimates were based on a limited sample and without data on the volume handled at each grade size.

The high percentage return to the producer reflects the lack of processing, packaging, and merchandising in the distribution system. For their services, wholesale assemblers in Saigon receive 7 percent of the retail price of market eggs, while retailers receive 10 percent.

	Initial sale at farm for <u>Saigon market</u>	Initial sale to provincial <u>retailer</u>
	----- <u>Percent</u> -----	-----
Producer	83	87
Wholesale-assembler	7	0
Retailer	<u>10</u>	<u>13</u>
	<u>100</u>	<u>100</u>

Producers in the provincial markets receive 87 percent of the retail price of market eggs by selling directly to retailers; retailers receive 13 percent. Since data are not available for evaluating the cost of marketing eggs, it was not possible to determine whether the market participants' added value is a justified return for their costs. Although retail prices may be reduced by increased marketing efficiencies, the case for major marketing reform is not questionless, given the low gross margins received by market participants. If the government policy is to lower the retail price of food to consumers (including chicken eggs), major emphasis must continue on improving production efficiency.

Processing

The high percentage of retail price received by producers reflects the lack of processing in South Vietnam. Currently, fresh market eggs are visually graded by size and sold loose. It was reported that a plant for candling and grading shell eggs would be in operation shortly in Saigon, however.

Egg candling and grading costs are of concern to consumers, producers, and egg handlers. In order to estimate egg handling costs, a 12 case (360 eggs) per hour plant was synthesized. Since consumers buy shell eggs loose and in small quantities, it does not seem practical to pack eggs in cartons. Also, cartons are expensive and likely to add significantly to the cost of handling eggs. The eggs in the model plant are candled, graded, and packed on flats for distribution. Costs analyzed are those incurred within the plant, while assembly and distribution costs are not included.

Table 4 illustrates estimated annual costs of egg handling in a 12 case per hour plant. Assuming the plant operates 8 hours per day, 300 days per year, a total of 28,800 cases are processed per year. The total annual cost is U.S.\$6,444. Primary costs are building, land, and equipment (handling and refrigeration). Given the extraordinary risk and uncertainty faced by entrepreneurs, a 25 percent rate of interest on the average invested capital was utilized in synthesizing costs. The rate of depreciation applied in the model was as follows: 10 percent of initial cost for the building and 20 percent for equipment.

At 100 percent capacity the minimum cost of grading, candling, and handling eggs for this plant is an estimated VN\$.3 per egg. Due to inadequate

Table 4.--Annual costs of grading and handling eggs (synthetic data) 1/

Item of Expense	U.S. dollars	Percent
Flats	490	7.6
Building and land	2,800	43.4
Refrigeration equipment	478	7.4
Egg handling equipment (candling and grading)-minimum automation but adequate for hand operation	966	15.1
Utilities	150	2.3
Egg handling labor (5 employees)	1,200	18.6
Fixed salaried employees	<u>360</u>	<u>5.6</u>
Total expenses	6,444	100.0
Cost per case	\$.23 (U.S.)	
Cost per egg	\$.3 (V.N.)	

1/ Specification: The plant is built to operate at 12 cases per hour and is operating at capacity. It operates 8 hours per day, 300 days per year for a total of 28,800 cases processed per year. See Appendix I for further explanation of cost estimates.

data, this cost does not include breakage, spoilage, miscellaneous operating costs, and taxes. When the plant operates at 50 percent capacity the estimated total cost would increase to VN\$.5 per egg.

Egg Consumption

Given the wide range of production estimates for chicken eggs and the lack of data regarding the supply of market eggs, accurate determination of per capita consumption of eggs is not possible. One source estimated that consumption was 34 eggs per person in 1970, which appears consistent with the estimated egg production of 630.8 million eggs. However, at an estimated production level of 277.3 million eggs, consumption would approach 17 eggs per person in 1970.

The per capita consumption of table eggs appears to be low for two reasons. First, the price of market eggs is relatively high by Vietnamese standards and, secondly, duck eggs are relatively less expensive and readily available in the Southern region. It has been estimated that annual consumption in the Delta is 10 chicken eggs and 24 duck eggs per person.

There is a definite preference for brown shell eggs since Vietnamese consumers feel white shell eggs are inferior in quality. Evidently, cold storage U.S. Commissary eggs (white shell) available on the black market in the past helped create the preference for brown eggs. The market price for brown eggs is generally 4 to 5 piasters more than for white eggs. Unless the consumer can be assured of consistent quality in white shell eggs, the existing preference is likely to continue.

CHICKEN

Total Production

Quantity and Location of Production

The number of chickens by province is reported by AESS. Table 5 shows that total numbers have been relatively stable from 1966 to 1970 (averaging 19.8 million head), and that the Southern region accounted for approximately 75 percent of the birds reported. Available information does not indicate what proportion of chickens reported are commercial broilers, market egg layers, pullets, local breeds, parent stock, etc. The annual quantity of chickens marketed on a liveweight basis is estimated by AESS and presented in Table 6.

Table 6.--Chicken marketed

Year	Numbers	Liveweight (M.T.)
1965	22,242,000	64,502
1966	19,980,000	57,942
1967	19,657,000	57,005
1968	20,005,000	58,014
1969	20,048,000	58,130
1970	19,260,500	55,855

The quantity marketed is derived as two times the number of chickens, and assumes the average market weight is 1.45 kg.

Although the Delta produces the largest number of chickens, the larger commercial flocks are concentrated in the provinces adjacent to Saigon and average 2,000 to 3,000 birds. In other areas, backyard flocks account for 80 percent of poultry production, while small commercial flocks (200-300 birds) account for the remaining 20 percent.

Table 5.--Number of chickens by province, South Vietnam, 1960-1970

Province	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
<hr/>											
<u>Western Part</u>	<u>Thousand head</u>										
An-Giang	989	1,049	1,245	1,441	806	1,028	890	1,027	950	929	885
An-Xuyen	435	435	492	934	711	906	798	733	700	750	850
Ba-Xuyen	706	706	901	780	551	777	832	826	812	900	915
Bac-Lieu	d/	d/	d/	d/	225	313	305	304	278	290	380
Chau-Doc	e/	e/	e/	e/	499	579	383	516	612	645	545
Chuong-Thien	i/	i/	586	320	669	186	382	350	320	350	355
Dinh-Tuong	1,390	1,761	2,140	2,413	1,563	1,560	1,802	1,320	1,350	1,350	1,100
Go-Cong	f/	f/	f/	f/	762	760	512	674	675	610	450
Kien-Giang	801	761	648	770	867	1,177	1,049	1,052	1,000	1,100	620
Kien-Hoa	1,376	1,614	1,277	1,622	1,736	1,476	1,057	1,050	1,050	1,000	930
Kien-Phong	392	365	445	546	497	569	694	650	580	600	510
Kien-Tuong	49	41	41	56	47	54	50	49	45	50	51
Long-An	923	1,063	1,591	1,101	1,156	1,011	1,082	1,020	1,200	1,200	1,100
Phong-Dinh	902	787	658	897	885	1,092	864	827	800	840	680
Vinh-Binh	856	857	1,119	1,344	1,304	1,360	645	750	750	700	800
Vinh-Long	1,077	1,209	1,258	1,299	881	1,342	755	1,020	950	950	770
Sa-Dec	b/	b/	b/	b/	b/	b/	302	400	400	390	430
Con-Son											20
<u>Eastern Part</u>											
Bien-Hoa	219	215	319	313	376	453	447	415	440	400	620
Binh-Duong	310	461	379	419	144	158	189	200	250	250	450
Hou-Nghia	g/	g/	g/	g/	581	695	616	530	550	550	610
Binh-Long	24	27	27	27	27	27	6	6	12	14	15
Binh-Tuy	43	36	36	36	36	36	26	28	30	56	57.5
Gia-Dinh	401	511	502	598	538	667	601	700	1,150	1,000	1,450
Long-Khanh	97	117	115	95	115	105	79	84	90	90	132
Phuoc-Long	0	0	0	84	84	84	145	145	145	150	95
Phuoc-Tuy	99	122	102	110	110	50	59	70	100	80	96
Tay-Ninh	309	400	363	382	321	306	338	402	425	425	450
Phuoc-Thanh	62	43	43	43	43	c/	c/	c/	c/	c/	c/
Total Southern Region.....	11,460	12,580	14,287	15,630	15,534	16,771	14,908	15,193	15,664	15,669	15,366.5
<u>Central Lowlands</u>											
Binh Dinh	876	769	1,003	1,211	1,198	927	729	700	600	600	610
Binh Thuan	81	81	112	82	64	65	105	136	135	140	141
Khanh-Hoa	373	341	335	369	442	401	430	306	300	310	312
Ninh Thuan	83	100	115	124	105	115	115	75	100	100	110
Phu-Ven	348	404	437	424	547	346	346	300	250	250	230
Quang-Nam	1,349	1,099	900	956	1,259	550	495	400	400	450	430
Quang-Ngai	1,278	1,182	1,225	1,396	1,432	1,455	1,434	1,100	1,000	1,000	650
Quang Tin	j/	j/	668	748	737	600	600	500	520	500	330
Quang Tri	178	236	203	197	237	216	19	120	150	148	149
Thua-Thien	426	400	579	693	661	559	559	500	500	500	410
Total Central Lowlands ...	4,992	4,612	5,577	6,200	6,682	5,279	4,832	4,137	3,955	3,998	3,372
<u>Central Highlands</u>											
Darlac	59	50	50	59	59	61	70	110	150	150	190
Kontum	41	24	24	38	38	38	30	34	36	40	43
Lam-Dong	27	24	24	19	19	16	16	50	65	66	69
Phu-Bon	h/	h/	h/	a/	a/	a/	a/	a/	a/	8.6	10
Pleiku	61	63	63	18	18	18	18	27	30	21.4	29
Quong Duc	0	0	0	17	17	25	25	25	25	25	31
Tuyen Duc	20	27	27	34	34	34	81	81	80	70	150
Total Central Highlands...	208	188	188	185	185	192	240	327	386	381	522
Total Vietnam	16,660	17,380	20,052	22,015	22,401	22,242	19,980	19,657	20,005	20,048	19,260.5

a/ Numbers for Phu-Bon included in Plei Ky province.

b/ Sa-Dec province, established 1966, was previously included as part of Vinh Long province.

c/ Phuoc Thanh " abolished in 1965, and annexed to Ben Hoa, Binh Duong, Phu Long and Long Khanh provinces.

d/ Bac-Lieu established 1964, previously included in Ba-Yuyen and Chuong Thien.

e/ Chau-Doc " " " " An-Giang and Kien Giang.

f/ Go-Cong " 1963, " " " Dinh-Tuong.

g/ Hau-Nghia " " " " Long An, Tay Ninh, and Binh Duong.

h/ Phu-Bon " 1962, " " " Phu Yen, and Plei Ky.

i/ Chuong Thien " 1961, " " " Phong Dinh, Kien Giang, and Ba Xuyen.

j/ Quang Tin " 1962, " " " Quang Nam.

One large commercial poultry producer firm has established broiler-raising contracts with farmers. In November 1971, each of the contract growers was raising a 3,000 bird flock. Initially, the firm provided credit to the farmers for building construction and equipment. Building costs were approximately VN\$2,500 per square meter, while the cost of equipment averaged VN\$2,000 per 100 birds. In addition, the firm provided the chicks, feed, medication and vaccines, gas for heating, brooders, and litter. The grower received 2 piasters per bird per week for his labor, land, building and equipment costs, and water. There was a provision in the contract for a bonus (approximately VN\$15,000 per flock) if feed conversion was less than 2.7, and a penalty if the conversion was greater than 3.0.

Production Costs

The largest cost items for producing commercial broilers are feed and chick costs. Table 7 illustrates production costs as reported for a large commercial farm in November 1971.

Table 7.--Production costs, large commercial broiler producers, November 1971

	VN\$/bird	Percent
Feed	246	55
Cost of chick	144	31
Death loss (7 percent)	11	2
Building and equipment	9	2
Labor and utilities	34	7
Vaccination and medication	5	1
Vitamins	10	2
Total	459	100

The average market weight of a broiler is 1.7 kg., thus the cost is VN\$270 per kilogram.

Feed costs for the small scale commercial operations are likely to be higher. For example, in the Delta, feed conversion ratio was approximately 3.0, and feed costs were higher than in the Saigon area. Based on the average market weight of 1.7 kg. per bird, a 3.0 feed conversion factor, and feed costs of VN\$55 per kg., the total feed cost per bird in the Delta was estimated at VN\$280.

Value of Production

The monthly liveweight market price of chicken is reported by province in the AESS yearbooks; this is summarized in Table 8. The average price of chicken in Vietnam increased from VN\$344 per kg. in 1969 to VN\$434 per kg. in

Table 8.--Prices of liveweight chicken of provincial markets

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Avg.
	VN\$/kg.												
<u>Vietnam</u>													
1969	265	297	346	331	340	328	352	346	346	341	371	367	344
1970	355	394	394	401	436	445	450	468	466	464	465	465	434
<u>Saigon</u>													
1969	252	275	300	300	312	312	300	335	340	317	327	342	309
1970	400	425	377	400	395	425	370	375	395	440	425	415	403
<u>Southern Region</u>													
<u>Western Part</u>													
1969	222	237	231	221	232	253	278	274	287	274	298	309	260
1970	312	335	336	349	367	377	386	419	423	417	425	407	379
<u>Eastern Part</u>													
1969	312	350	349	324	351	283	330	341	324	322	369	338	337
1970	343	362	365	390	436	486	461	438	470	469	451	453	431
<u>Central Lowlands</u>													
1969	331	387	440	428	421	430	419	401	421	427	436	411	419
1970	416	483	470	483	511	516	522	532	505	518	516	516	495
<u>Central Highlands</u>													
1969	295	432	486	467	470	428	478	450	411	411	459	486	453
1970	396	491	476	463	497	449	503	538	540	525	521	561	494

Source: AESS yearbooks.

1970, a 26 percent increase. In Saigon the average market price increased 30 percent, from VN\$309 per kg. in 1969 to VN\$403 per kg. in 1970. During 1969 and most of 1970, chicken was usually more expensive in the Central Highlands and Central Lowlands than in Saigon, while in the western part of the Southern region, it was generally cheaper than in Saigon.

The Joint Economic Office (USAID/ADEPP) also publishes monthly Saigon retail prices of live chicken. This series is presented in Table 9, together with the AESS bi-weekly series of retail prices of chicken in Saigon. The table shows the difference between the two series is considerable in the first half of 1970, but diminishes in 1971. This illustrates the problem of determining the market retail price in Vietnam. The retailer will generally charge whatever the market will bear, and each transaction that takes place between the buyer and retailer is individually negotiated. Although price lists are often posted by retailers, it was apparent that they were virtually meaningless.

During the third quarter of 1970 the average Delta price for chickens was greater than in Saigon, and then oscillated around the Saigon price for the remainder of 1970 and into 1971. The reason for this behavior was not readily apparent since information was not available to show either the seasonal supply in these areas or the geographical movements taking place.

Marketing Distribution System

Marketing Channels

The flow of broilers from large scale producers surrounding Saigon to consumers will generally follow this route: farmer-wholesaler-retailer. An insignificant quantity is sold directly to consumers at the farm. Customarily, so-called professional wholesalers deal solely with certain large commercial producers. The birds are sold at the farm on a liveweight basis, and the buyer will take 200-250 birds from an individual producer each visit. Thus, when a 3,000-4,000 bird flock reaches market weight (approximately 9 weeks), it may take the farmer an additional 4 to 5 weeks to market all the birds. The current size of individual wholesale operations is such that wholesalers are unable to market a large broiler flock at one time.

The wholesaler transports the broilers to the city and distributes them live to retailers. Some wholesalers distribute dressed poultry to hotels, butchers, and restaurants; however, the greatest proportion of broilers are sold by retailers in the public marketplace. Consumers prefer live birds since they suspect dressed poultry may be diseased. Without refrigeration, the housewife is able to keep a live bird until ready for preparation. However, retailers do dress some poultry for consumers, apparently for immediate consumption.

The flow from small scale producers surrounding Saigon to consumers follows this route: farmer-assembler-wholesaler-retailer. There are approximately 200 assemblers who buy at the farm and transport chickens to

Table 9.--Vietnam: Chicken prices, liveweight

Month	Saigon		Month	Delta		Month	Saigon		Delta
	ADEPP 1/	AESS 2/		ADEPP 1/	AESS 2/		ADEPP 1/	AESS 2/	
1970			1971						
Jan. 1	280	325	Jan. 1	499	410	Jan. 1	499	410	414
15	---	376	15	---	425	15	---	425	421
Feb. 1	291	425	Feb. 1	493	500	Feb. 1	493	500	461
15	---	425	15	---	440	15	---	440	441
Mar. 1	285	405	Mar. 1	487	425	Mar. 1	487	425	423
15	---	350	15	---	415	15	---	415	424
Apr. 1	330	400	Apr. 1	490	450	Apr. 1	490	450	419
15	---	400	15	---	450	15	---	450	424
May 1	360	400	May 1	484	450	May 1	484	450	415
15	---	390	15	---	450	15	---	450	425
June 1	360	435	June 1	453	450	June 1	453	450	417
15	---	415	15	---	425	15	---	425	429
July 1	363	365	July 1	448	430	July 1	448	430	428
15	---	375	15	---	430	15	---	430	444
Aug. 1	352	350	Aug. 1	451	450	Aug. 1	451	450	444
15	---	400	15	---	450	15	---	450	422
Sept. 1	387	400	Sept. 1	450	450	Sept. 1	450	450	427
15	---	390	15	---	450	15	---	450	412
Oct. 1	415	430	Oct. 1	455	---	Oct. 1	455	---	---
15	---	450	15	---	---	15	---	---	---
Nov. 1	403	425	Nov. 1	---	---	Nov. 1	---	---	---
15	---	425	15	---	---	15	---	---	---
Dec. 1	433	415	Dec. 1	---	---	Dec. 1	---	---	---
15	---	415	15	---	---	15	---	---	---

1/ Source: Joint Economic Office, Saigon monthly retail price.

3/ Source: AESS Bimonthly Report. Average all Delta provincial.

2/ Source: AESS Bimonthly Report.

wholesalers in Saigon. An individual wholesaler may purchase 50-60 birds from each of the 10 to 12 assemblers with whom he ordinarily does business. In one case, a wholesaler estimated death and shrinkage loss may approach 25 percent; also, 'sick' birds were sold at a 50 percent discount. It appeared selling 'sick' birds was common since there was no regulation against this practice. Marketing poultry from the farm to the consumer may take 4 to 5 days and quality is highly variable.

Differences Between Saigon and Provincial Markets

In rural areas some poultry is sold directly by producers to consumers at the farm and/or in the marketplace. The major flow of chicken into provincial markets follows either of two routes: (1) farmer-retailer, or (2) farmer-assembler-retailer.

Small producers located some distance from the provincial market generally sell to a country assembler. This assembler provides a valuable service in the rural areas by collecting from a large number of small farmers and delivering to retailers in the public marketplace.

Small producers located near the market and commercial producers normally sell direct to retailers. Some producers deliver to retailers, while retailers generally assemble broilers from large commercial farms. Retailers located in the public marketplace sell directly to consumers, and in some instances may sell an insignificant quantity wholesale to other smaller retailers. The larger retailers are likely to supply the military, schools, hospitals, or restaurants in their area. In Can Tho, the largest retailer had an annual contract to supply a food service firm with 100 kg. of chicken daily.

Some retailers also shipped chickens to Saigon every second or third day, usually by bus. Normally, 3 to 5 baskets (30-40 head each) were sent at a cost of VN\$200 per basket. In addition, a tax of VN\$.5 per head was collected at Phu Lam. The price received by the shipper for sales in Saigon was VN\$10 to 15 per head higher than in local markets. Since most of the birds handled are sold directly to consumers in the local market, the dealer was classified as a retailer. In small rural markets chickens are sold by the head at all market levels, instead of a liveweight basis as in the larger markets. The local breed of chicken is likely to be more prevalent in these rural markets, but they are reportedly declining in number. However, the local breed generally sells VN\$20-40 per head higher than improved or imported breeds.

Marketing Margins

Table 10 shows the estimated percentage of average retail chicken price absorbed at each level in the market channel during November 1971.

The relatively high producer share of retail price reflects the lack of processing, packaging, and merchandising in the marketing channels for chicken.

Table 10.--Percentage of retail price of chicken absorbed at each level in the market channel, November 1971

	Initial sale for Saigon market		Provincial markets	
	Large producers	Small producers	Producers near the market	Producers distant from the market
	<u>Percent</u>			
Farmer	77	74	88	85
Assembler	--	4	--	5
Wholesaler	6	5	--	--
Retailer	17	17	12	10

However, the producer's share is smaller around Saigon than in the provincial markets since more marketing functions are performed for urban areas. Although dressed poultry is not widely accepted, it is more significant in urban markets than in rural markets. Dressing for some customers is one function performed by retailers and explains the higher retail margin in Saigon (17 percent of retail price). Additionally, overhead costs for retailers are higher in Saigon than in the provincial market. One retailer in Saigon paid a monthly rent of VN\$1500 as opposed to VN\$600 per month in My Tho.

When the initial sale at the farm is made to assemblers for the Saigon market, the producer's share of retail price declines from 77 to 74 percent. For his services the assembler generally receives 4 percent of retail price. The wholesaler performs a larger portion of the marketing function and receives a greater share of retail price when he buys directly at the farm from large producers and transports the chickens to his business establishment. Obviously, the 5 to 6 percent of retail price received by the wholesalers in Saigon reflects the low overhead of the family operated business. Wholesalers generally operate from their homes, have small capital requirements, and use family labor. When chickens are sold to restaurants or hotels, the wholesaler may hire neighbors to dress the chicken at a reported cost of VN\$5 per head.

Processing

Vietnamese consumers generally prefer live poultry; however, some chickens are sold dressed in the marketplace. Under prevailing custom a whole chicken is usually cut up into small cubes and prepared in a stew fashion. Unless consumer tastes and preferences change, dressed poultry will not achieve widespread acceptance in the public market. As home refrigeration is introduced and becomes more common, preferences are likely to change and acceptance of dressed poultry more likely.

Institutional outlets currently purchase the greatest proportion of dressed poultry. The greatest potential for marketing dressed poultry in the foreseeable future appears to be food service firms servicing schools and hospitals, the military, and restaurants.

Two additional conditions are necessary to help insure acceptance of dressed poultry. The supplier must first improve the quality of dressed birds. The establishment of market regulations dealing with handling practices, grades and standards, and inspection of dressed poultry may be helpful. Secondly, the cost of slaughtering chicken is of major concern to potential consumers, producers, and processors. The cost of slaughtering chicken is particularly important since high costs will have an adverse effect on the quantity of dressed poultry taken by Vietnamese consumers.

Various producer associations have expressed a desire to establish a poultry processing plant. The estimated costs of a 600 broiler per hour processing plant were synthesized and presented in Table 11. Assuming the plant operates 8 hours per day, 350 days per year, a total of 1.68 million broilers will be processed per year, at a total cost of VN\$18.8 million. The cost per bird is VN\$11.2, or VN\$10.7 per kg. The dressing yield assumed was 70 percent; thus, the dressed weight of an average 1.5 kg. broiler is 1.05 kg. It was reported a one piaster production tax would be levied on each broiler processed, increasing the cost of processing each broiler. The cost estimates include the following inplant functions: Receiving, holding, killing, dressing, eviscerating, sizing, cooling, packing, and icing. In addition, the costs of two refrigerated trucks and distribution are included. Primary costs are labor (34.4 percent of total costs), equipment (30.9 percent), and packaging material (12.1 percent). The relatively high cost of equipment is attributed to the rate of interest utilized in synthesizing costs. Due to high risk and uncertainty, a rate of 25 percent on the average invested capital was utilized. The rate of depreciation on equipment was 10 percent of initial cost.

In order to reduce the fixed costs per unit of output, the plant could operate 16 hours per day, 350 days per year, thus processing 3.36 million broilers per year (or 3,528 M.T.), at a total annual cost of VN\$26.6 million. The cost per broiler would be VN\$7.9 or VN\$7.5 per kg. As expected, the variable plant wages would increase from 19.9 percent of total cost (one shift) to 28.2 percent when the plant operates two shifts. The cost of equipment would decline to 21.9 percent of total cost. Although the unit cost of processing would decline, the plant could experience difficulty in obtaining adequate supply to operate at this rate on a daily basis. The storage facilities were specified to be adequate when the plant operates 16 hours per day, implying excess storage capacity when the plant operates 8 hours per day.

With regard to market potential, the retail outlet for processed poultry is still questionable. First, the shelf life for dressed poultry (ice packed) under ideal conditions is approximately 6 days. Under current retail conditions the lack of refrigeration causes a high degree of spoilage unless the broilers are sold immediately. The cost of refrigeration for many small

Table 11.--Annual costs of poultry processing and handling
(Synthetic data) 1/

Item of expense	600 broilers/hour plant			
	8-hour shift		2 shifts (16 hours)	
	VN\$	Percent	VN\$	Percent
Crates	400,000	2.1	400,000	1.5
Packaging material	2,275,000	12.1	4,550,000	17.1
Fixed salaried employees ..	2,724,000	14.5	2,724,000	10.3
Variable plant wages	3,744,000	19.9	7,488,000	28.2
Building and land	2,095,000	11.2	2,095,000	7.9
Equipment	5,804,375	30.9	5,804,375	21.9
Utilities, electric, water, gasoline	1,662,050	8.8	3,324,100	12.5
Miscellaneous	100,000	.5	175,000	.6
Total expense VN\$	18,804,425	100.0	26,560,475	100.0
Cost per bird	11.2		7.9	
Cost per kg.	10.7		7.5	

1/ Specification: The plant is built to operate at 600 broilers per hour and operating at full capacity. It operates 8 hours per day, 350 days per year; a total of 1.68 million chickens are processed per year. But when the plant operates two shifts (16 hours) per day, 350 days per year, it would process 3.36 million chickens per year. The dressed weight of a broiler is 1.05 kilograms. See Appendix II for further explanation of cost estimates.

retailers may be prohibitive. The institutional outlets appear to offer the greatest initial potential, as they are likely to have improved facilities for proper handling of dressed poultry, and are likely to prefer the convenience of dressed poultry.

The value of byproducts was omitted in this study, due to lack of data. However, the potential of selling byproducts does exist and should be examined in detail. For example, offal may be sold to swine raisers; feathers used in producing feather meal; heads and shanks used by restaurants.

Imported canned poultry is available in the Saigon market, raising the question whether poultry should be canned domestically. Prior to the economic reform (Nov. 15, 1971), canned poultry products found in the market were reportedly imported by the military (at VN\$118/US\$) for use by military personnel and their dependents. Some of these products were sold on the black market. A 248 gram can of chicken curry was selling for VN\$200, and braised chicken for VN\$80. These relatively low prices and the high cost of canning in Vietnam have discouraged domestic processors.

The potential for canned poultry appears limited in the near future, as the canning industry is inefficient and currently all materials must be imported. The availability of imported canned poultry on the black market is likely to have some effect on consumption of domestic poultry, and measures to discourage this activity seem appropriate. As the potential for supplying processed (dressed) poultry increases domestically, some consideration should be given by the Army of Vietnam to domestic suppliers, especially for commissary use. This would reduce the need for foreign exchange currently used to import canned poultry.

The 5-Year Agricultural Development Plan outlined the goal of introducing smoked meat to aid farmers when there is an overabundance on the market, and to make meat smoking an industry. Discussions with Vietnamese nationals indicated that consumers would consider smoked poultry a specialty item such as roasted poultry which is currently available at butcher shops and vending stands. The outlet for roasted poultry appeared to be insignificant.

The average retail price of chicken in November 1971 was approximately VN\$450-480 per kg., which is expensive by Vietnamese standards. The large farmers surrounding Saigon received 77 percent of the retail price, or VN\$347-370 per kilogram. The introduction of processing is certain to increase the marketing margin and cause higher prices to consumers. This fact would not necessarily discourage the introduction of poultry processing, but does point up the need to encourage further improvements in production efficiency. The desire to expand domestic consumption of poultry will only be satisfied when production costs are reduced, or personal incomes increased.

Consumption

The per capita consumption of chicken is relatively low in Vietnam. In 1970, it was an estimated 3.3 kilograms. However, the quantity consumed varies geographically. For example, in the Delta, per capita consumption was reportedly 1.5 kilograms. Obviously, the large quantity of ducks available at relatively lower prices in the Delta is a major cause of lower chicken consumption.

Although current consumption of chicken is low in Vietnam, the potential for expanding the market for chicken appears to exist. The Vietnamese have accepted poultry in their diets and are willing to consume greater quantities, but the relatively high price of chicken has limited the quantity actually consumed. Lower retail prices would likely expand current consumption.

DUCKS AND DUCK EGGS

Total Production

Quantity and Location of Production

South Vietnam is currently one of the largest duck producing countries in the world. The number of ducks increased from 9.9 million head in 1960 to 14.7 million in 1970; liveweight marketings of duck increased from 33,574 M.T. in 1960 to 48,852 M.T. in 1970; and total egg production increased from 138.9 million eggs in 1960 to 202 million eggs in 1970 (Table 12). Much of the expansion in the duck industry took place in the first half of the decade, reaching a peak in 1968 of 15.1 million ducks, 51,128 M.T. of ducks marketed, and 211.5 million eggs produced.

Table 12.--Ducks: Numbers, marketings, and total egg production
South Vietnam, 1960-1970

Year	Numbers	Marketings liveweight 1/	Total egg production
	Thousands	M.T.	
1960	9,948	33,574	138,857,440
1961	11,035	37,243	154,030,070
1962	11,494	38,792	160,436,980
1963	12,992	43,848	181,346,580
1964	12,614	42,572	176,070,330
1965	13,484	45,508	188,213,960
1966	13,939	47,044	194,565,130
1967	13,742	46,381	191,815,270
1968	15,149	51,128	211,454,620
1969	14,102	47,594	196,840,270
1970	14,745	48,852	202,043,980

1/ 1.5 times the number of ducks times 2.25 kg. (average weight) = marketings liveweight.

Source: AESS

The Delta is the largest duck producing area in Vietnam, accounting for 78 percent of the number of ducks in 1970 (Table 13). The number of birds in a flock varies from the backyard type with up to 20 ducks, to the commercial producer with up to 10,000 ducks.

Table 13.--Number of ducks by province, South Vietnam, 1960-1970

Province	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Western Part											
	Thousand head										
An-Giang	432	599	538	783	586	597	619	643	601	500	490
An-Xuyen	330	327	450	675	410	590	424	500	378	325	335
Ba-Xuyen	401	539	376	435	379	316	377	689	840	800	820
Bac-Lieu	d/	d/	d/	d/	105	242	180	334	250	260	330
Chau-Doc	e/	e/	e/	e/	192	193	155	186	190	160	220
Chuong-Thien	i/	i/	530	494	328	78	122	150	150	180	185
Dinh-Tuong	983	983	1,695	2,334	1,546	1,462	1,927	1,934	2,500	2,100	1,700
Go-Cong	f/	f/	f/	f/	539	1,148	612	594	720	706	680
Kien-Giang	412	339	278	284	313	535	485	400	400	369	370
Kien-Hoa	1,065	1,286	866	1,163	1,410	1,128	1,237	1,200	1,500	1,109	1,100
Kien-Phong	164	142	145	191	219	254	336	254	275	218	220
Kien-Tuong	44	56	49	41	49	47	32	40	50	40	45
Long-An	996	960	1,562	1,286	1,269	1,099	999	1,000	1,200	1,200	1,900
Phong-Dinh	641	637	437	473	418	667	969	683	600	630	530
Vinh-Binh	868	1,562	1,103	1,149	944	1,103	1,106	1,150	1,300	1,400	1,400
Vinh-Long	844	700	912	1,123	1,002	650	515	648	650	600	605
Sa-Dec		b/	b/	b/	b/	b/	314	300	325	350	370
Con-Son											2.1
Eastern Part											
Bien-Hoa	170	91	166	177	157	456	349	322	350	300	310
Binh-Duong	207	384	213	163	187	205	220	180	150	150	180
Hou-Nghia	g/	g/	g/	g/	215	247	227	300	500	500	520
Binh-Long	7	8	8	7	7	7	2	1	3	4	4.1
Binh-Tuy	23	1	1	7	7	7	24	22	20	25	27
Gia-Dinh	573	431	516	415	386	372	338	401	450	400	350
Long-Khanh	15	18	14	13	11	35	56	60	60	55	40
Phuoc-Long	0	0	0	2	2	2	3	2.8	2	2	2.1
Phuoc-Tuy	148	243	246	252	205	108	118	91	50	50	42
Tay-Ninh	33	66	19	59	56	80	50	107	120	100	121
Phuoc-Thanh	10	7	7	7	7	c/	c/	c/	c/	c/	c/
Total Southern Region	8,367	9,379	10,131	11,533	10,949	11,628	11,796	12,191.8	13,634	12,533	12,898.3
Central Lowlands											
Binh Dinh	295	248	220	238	236	209	318	233	300	260	270
Binh Thuan	72	135	68	77	70	70	72	109	100	110	120
Khanh-Hoa	229	229	166	136	159	205	532	215	200	200	184.5
Ninh Thuan	8	5	8	8	19	17	17	18	25	25	65
Phu-Ven	147	147	156	160	193	206	206	150	150	150	125
Quang-Nam	291	291	89	113	128	128	113	115	64	100	180
Quang-Ngai	218	187	209	247	320	330	277	270	300	350	280
Quang Tin	j/	j/	201	260	206	323	323	200	150	130	110
Quang Tri	102	165	104	65	132	209	120	94	79	65	75
Thua-Thien	198	228	121	138	185	143	143	120	120	150	130
Total Central Lowlands	1,559	1,635	1,342	1,442	1,648	1,840	2,121	1,524	1,488	1,540	1,539.5
Central Highlands											
Darlac	3	3	3	4	4	3	2	1	1	2	8
Kontum	4	1	1	3	3	3	4	3.3	5	5	5.1
Lam-Dong	6	6	6	4	4	3	4	2	2	2	2.6
Phu-Bon	h/	h/	h/	h/	a/	a/	a/	a/	a/	3.2	3.3
Pleiku	4	7	7	0	0	0	0	8.3	10	6.8	9
Quong Duc		0	0	1	1	2	4	4	4	4	2.5
Tuyen Duc	5	4	4	5	5	5	8	8	5	6	6.5
Total Central Highlands	22	21	21	17	17	16	22	26.6	27	29	37
Total Vietnam	9,948	11,035	11,494	12,992	12,614	13,484	13,939	13,742	15,149	14,102	14,474.8

a/ Numbers for Phu-Bon included in Plei Ky province.

b/ Sa-Dec province, established 1966, was previously included as part of Vinh Long province.

c/ Phuoc Thanh " abolished in 1965, and annexed to Ben Hoa, Binh Duong, Phuoc Long and Long Khanh provinces.

d/ Bac-Lieu established 1964, previously included in Ba-Yuyen and Chuong Thien.

e/ Chau-Doc " " " " " An-Giang and Kien Giang.

f/ Go-Cong " 1963, " " " Dinh-Tuong.

g/ Hau-Nghia " " " " " Long An, Tay Ninh, and Binh Duong.

h/ Phu-Bon " 1962, " " " Phu Yen, and Plei Ky.

i/ Chuong Thien " 1961, " " " Phong Dinh, Kien Giang, and Ba Xuyen.

j/ Quang Tin " 1962, " " " Quang Nam.

Although seasonal production data are not available, it is apparent that raising ducks is closely related to the rice harvest season. During harvest, the flock is allowed to free feed, making feeding costs minimal. From July-September the movement of ducks from the Delta to Saigon is insignificant; during October-February it is at its peak; and it declines significantly from March-June.

In the coastal provinces near Nha Trang, most of the ducks are started in March and September. Since it requires approximately 100 days to raise ducks to market weight, marketing of ducks in the Central Lowlands is seasonally high during June and January-February. Flock sizes in this area generally average 1,000-3,000 birds, while an estimated 30 percent are greater than 5,000 head.

When the ducks reach market age, 12 to 20 percent of the flock may be retained for breeding purposes. The birds will commence to lay at 20 to 22 weeks, and will be kept 5-6 months for laying purposes. The average rate of lay is reportedly 80 percent. The estimated seasonal production of duck eggs is not available. However, it appears peak egg production is reached in May, with the seasonal low in January and February.

Production Costs

Although adequate data to estimate total production costs are not available, the following presents a brief description of basic cost items in raising ducks. In November 1971, the reported cost of ducklings varied geographically from VN\$28 to 30 each in the Delta (Sa Dec and My Tho), to VN\$45 each in Saigon and VN\$45 to 50 each in the Central Lowlands (Nha Trang). Producers generally feed dried shrimp for the first month, followed by free feeding in rice fields until 10 to 20 days prior to marketing, when the flock is put on full feed. In My Tho, a 3,000 bird flock was fed 500 kg. of rice per day while on full feed prior to marketing, while another flock of 6,000 birds was fed 1 M.T. of corn per day. During the rainy season and rice harvest, flocks are not fed as much since the flock is allowed to roam and free feed; a 3,000 bird flock may receive 100 kg. of rice daily.

Large flocks are normally attended at all times. In one case, a 3,000 bird flock on an open pond required 2 adult attendants and 2 children. Each adult received VN\$10,000 per month and each child VN\$5,000. The requirement for capital resources involved in raising ducks appeared to be minimal under current production techniques. Whether producers owned or rented the land for raising ducks was not determined. The death loss in raising ducks is approximately 13 to 15 percent. Costs of producing duck eggs were not estimated due to lack of adequate data.

Value of Production

The average market price of liveweight duck in Vietnam increased from VN\$225 per kg. in 1969 to VN\$314 per kg. in 1970 (Table 14). In Saigon, it increased from VN\$270 per kg. to VN\$341 per kilogram. The market price of

Table 14.--Prices of liveweight duck at provincial markets

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Avg.
	----- VN\$/kg. -----												
<u>Vietnam</u>													
1969	197	217	241	201	214	231	245	231	225	230	243	251	225
1970	258	298	295	300	291	311	322	332	348	338	332	325	314
<u>Saigon</u>													
1969	205	212	230	240	262	267	285	312	282	275	327	342	270
1970	297	350	350	360	350	362	312	316	337	370	345	340	341
<u>Southern Region</u>													
<u>Western Part</u>													
1969	178	186	189	182	190	219	241	215	210	214	223	231	203
1970	243	281	283	286	290	303	307	333	354	345	339	334	311
<u>Eastern Part</u>													
1969	203	225	211	201	215	223	224	206	188	211	240	265	215
1970	251	273	285	271	295	328	350	313	316	315	313	313	302
<u>Central Lowlands</u>													
1969	244	275	333	283	308	325	312	316	311	305	316	315	304
1970	316	383	*	370	295	333	*	*	*	*	341	*	343
<u>Central Highlands</u>													
1969	225	300	330	200	*	*	*	*	*	*	*	*	*
1970	*	*	*	*	*	*	*	*	*	*	*	*	*

* Not available.

Source: Vietnam Agricultural Economics and Statistics Service.

duck was usually lower in the Southern region and higher in the Central Lowlands than in Saigon.

The average price of duck eggs, by region, is presented in Table 15. The 1965 average of VN\$25.5 per 10 eggs increased to VN\$178 in 1970. However, the price in Saigon declined in 1971 from VN\$200 per 10 eggs in January to VN\$155 in July. As pointed out previously, the decrease in market price during 1971 was caused in part by a decline in general economic activity which caused consumer purchasing power to fall. The differences in market price between the Delta and Saigon is not significantly large. In 1970 the average price was VN\$181 per 10 eggs in Saigon, contrasted to VN\$169 in the western part of the Southern region and VN\$182 in the eastern part. The price of duck eggs is generally higher in the Central Lowlands and in the Central Highlands than in Saigon.

Marketing Distribution System

Ducks for Meat

The flow of live ducks from producers in the Delta to retailers in Saigon will generally follow one of three routes: (1) producer-commission broker-retailer, (2) producer-assembler-wholesale distributor-retailer, or (3) producer-wholesale distributor-retailer.

There are approximately 30 commission brokers in the Saigon market. Commission brokers generally provide trucks, each having a 2,500-3,000 bird capacity, to transport flocks from the large Delta producers to their depot in Cholon. They charge producers 10 piasters per bird for transportation, feed, water, labor, land, and selling. Most ducks are sold within 2 days to retailers in the Saigon market. The larger retailers will usually purchase 100-200 head per transaction, while the smaller retailers take 10-20. Some retailers transport ducks to markets in central Vietnam. Delta producers of small flocks (20-200 ducks) will normally satisfy local markets and ship any oversupply via bus or private vehicle to the brokers in Saigon.

Producers located some distance from the Saigon market usually sell to assemblers located in their area. The assembler in turn transports the ducks to wholesaler distributors in Saigon. Assemblers may dispose of some ducks in the local market when possible. The Saigon wholesale distributors buy the birds and distribute them in the same manner as commission brokers.

Some producers will bypass the country assembler and sell directly to the wholesale distributor in Saigon. The function of transporting flock to Saigon is usually performed by producers, although wholesalers are likely to provide transportation for large producers located within a days travel.

An estimated 25 percent of ducks handled by commission brokers and wholesalers are purchased by duck feeder operations located in Cholon. The primary function of this operation is to fatten ducks for roasting. The ducks

Table 15.--Prices of duck eggs at provincial markets, 1965-1971

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Avg.
	----- VN\$ per 10 eggs -----												
<u>Vietnam</u>													
1965	22	21.5	21.5	21	23.5	24.5	25	27	29	33.5	36	37	25.5
1966	42	42.5	42.5	42.5	42.5	42.5	43	45.5	47	50	51.5	54	45
1967	56	57	58	57.5	61	62.5	65.5	69.5	77	80	81	83	70
1968	79	87	93	84	95	93	92	92	102	107	108	107	96
1969	106	106	117	115	122	120	120	115	117	125	133	132	119
1970	140	148	148	163	177	175	180	182	192	206	213	212	178
1971													
<u>Saigon</u>													
1965	20	20	20	22	25	25	25	26	32.5	39	39	38	27.5
1966	44	39	38	41.5	43	34.5	43	45	48.5	50	54	52.5	44.5
1967	53	49	49	58.5	64	61	67	75	85	82	82	82	67
1968	81	--	97	95	120	92	95	100	117	117	105	107	102
1969	105	108	110	106	112	115	104	102	115	127	127	137	114
1970	142	147	145	172	180	185	180	182	210	227	202	205	181
1971	200	202	160	172	180	155	155						
<u>Southern Region</u>													
<u>Western Part</u>													
1965	19.5	19.5	19	20	22	22.5	22.5	23	28	33	34	35	24
1966	37	38	38	37.5	39.5	37.5	38.5	42.5	43	45	45	45.5	40.5
1967	45	47	46.5	48	55	58	62	68	75	78	78	76	62
1968	75	78	78	76	87	84	80	87	93	99	102	100	86
1969	96	97	94	95	98	104	98	97	100	111	123	119	103
1970	125	136	136	147	165	171	171	179	186	206	206	201	169
1971													
<u>Eastern Part</u>													
1965	20	20	20	19.5	24	25	25.5	28	30	38	39	39.5	25
1966	40.5	43.5	45	45	46	45.5	43.5	46.5	47	50	57	57	47.5
1967	58.5	59	60.5	61	64	65.5	67	68	76	82	81	88	69
1968	84	110	114	96	106	105	95	96	112	112	109	110	103
1969	114	105	119	115	120	119	118	116	118	128	135	135	121
1970	141	145	154	164	175	180	181	184	197	218	218	215	182
1971													
<u>Central Lowlands</u>													
1965	24.5	25	24	23.5	25	26	28	26	27.5	29	33.5	37.5	26
1966	47	49.5	48	47	46	48	51	51.5	56	61.5	58	71.5	52.5
1967	80	80	80	81.5	71.5	70	70.5	72.5	77	77.5	82	84	79
1968	87	--	86	86	95	97	102	102	115	115	117	117	102
1969	119	130	134	136	135	131	133	128	132	132	144	142	134
1970	149	162	155	166	176	167	172	173	176	187	206	212	175
1971													
<u>Central Highlands</u>													
1965	24	22	23.5	23.5	22.5	30	35.5	37	31	38	42	45	28
1966	52.5	47.5	45	47.5	49	51	49.5	51	55	62.5	64	62.5	53
1967	67.5	65	60	65	69	70	73.5	77.5	--	90	100	100	86
1968	73	--	120	115	122	112	123	130	120	123	125	120	123
1969	127	135	142	133	165	146	156	137	138	145	141	143	143
1970	160	164	156	194	209	191	210	203	223	216	237	237	200
1971													

Source: Vietnam Agricultural Economics and Statistics Service.

are put on a forced feeding program consisting of broken rice for 7 days; they will gain approximately .3 kilograms. At the end of this period the birds are killed and dressed for distribution. The estimated costs per bird for this operation are:

<u>Item</u>	<u>VN\$</u>
Rice	35
Labor involved in feeding	35
Labor used in killing and dressing	15

The primary outlets for these fattened ducks are restaurants and retail butchers. Ducks delivered to the restaurant trade are usually eviscerated, while butchers prefer ducks that are dressed but not eviscerated.

In the local provincial markets, producers sell ducks either to consumers or retailers. Dressed duck appeared to be more common in markets than dressed chicken; apparently the market value of duck feathers encourages retailers and duck feeder operators to dress the ducks. In November 1971, dry feathers were worth VN\$150-200 per kilogram. Most feathers are exported to Japan, Germany, and the United States, the export price varying from U.S.\$.60 to \$5 per kg. depending on quality and use to be made of the feathers. The Saigon Feather Mill reportedly has the capacity to dry and grade 10 M.T. of duck feathers per 24 hours of operation. Cost data for this were not available.

Table 16 shows the estimated percentage of the average retail duck price absorbed at each level in the marketing channel during November 1971.

Table 16.--Percentage of retail price of duck absorbed at each level in the market channel, November 1971

	<u>Initial Sale for Saigon Market</u>		<u>Provincial markets</u>
	<u>Through Broker</u>	<u>Through Assembler</u>	
	<u>Percent</u>		
Farmer	73	61	80
Assembler	--	7	--
Commission			
Broker	3	--	--
Wholesaler			
Distributor	--	12	--
Retailer	24	20	20

The marketing margin absorbed by retailers is higher for ducks than for chickens, since a greater proportion of market ducks are dressed, primarily by retailers. The seasonal nature of duck production may also explain some of the higher market margin for ducks at the retail level. The producer's margin is smaller when the flock is marketed through an assembler as opposed to a commission broker. However, these producers are likely to be located a greater distance from Saigon, resulting in a larger transportation cost. Obviously, the producer's percentage of retail price is greatest when he sells to a local retailer in the provincial markets of the Delta.

The available price data for ducks handled by duck feeders in Cholon were not adequate to estimate the marketing margin. The price information obtained during interviews with various participants in this market channel was not consistent among levels, and was highly variable. The existing marketing system for ducks is apparently capable of handling large flocks. Ducks are generally graded by size (large, medium, and small), but uniform standards have not been established by the industry or government. Dressed ducks were not inspected and refrigeration facilities for maintaining quality are nonexistent. It should be noted the estimated market margins are static in nature, since they are based on November 1971 prices. Data were not available to allow estimation of marketing margins on a monthly basis.

The estimated per capita consumption of ducks in Vietnam for 1970 was 2.4 kilograms.

Duck Eggs

During the hatching season producers will select fertile duck eggs and sell them to the rice hull hatcheries while the usual flow of duck eggs for table use will follow one of three routes: (1) producer-retailer, (2) producer-wholesaler-retailer, and (3) producer-assembler-wholesaler-retailer.

Most duck eggs are marketed fresh, but some are made into specialty items such as salted eggs and herb smoked or ash eggs. Duck eggs are generally packed into baskets and handled in this fashion through the market channels until purchased by the consumer. In the provincial areas the producers near the market generally deliver eggs to the retailer located in the public marketplace. These retailers handle other poultry products as well and appear to have low overhead and operating costs. Most eggs are sold to consumers within 2 or 3 days.

Duck eggs intended for the Saigon market move from Delta producers to wholesalers in Saigon either directly or through country assemblers. In some cases, the larger producers have previous selling arrangements with a particular wholesaler and deliver to him 2 or 3 times per week. Wholesalers normally look for cracks and size when grading eggs; during the hatching season, they also candle eggs to sort out the fertile ones since wholesalers often operate rice hull hatcheries. Although the wholesalers sell duck eggs directly to consumers, the major outlet is to the city retailers.

Many farmers sell to country assemblers who in turn transport the eggs to Saigon wholesalers 2 or 3 times a week. The eggs handled in this manner may take up to 7 days before they reach the consumer in Saigon.

The estimated percentage of retail price of duck eggs absorbed at each level in the marketing channel during November 1971 are presented as follows:

Table 17.--Percentage of retail price of duck eggs absorbed at each level in the market channel, November 1971

	Initial sale to provincial retailer	Initial sale for Saigon market
	Percent	
Producer	88	81
Assembler	--	6
Wholesaler	--	4
Retailer	12	9

Producers receive approximately 88 percent of the retail price of duck eggs when they sell to retailers at provincial markets. When the initial sale is made at the farm for the Saigon market, the producer receives 81 percent of the retail price. For their services, the assembler receives 6 percent, the Saigon wholesaler 4 percent, and retailers 9 percent. Producers will receive 87 percent of retail price if they deliver the eggs to wholesalers in Saigon. Once again the high producer margin for duck eggs reflects the lack of processing, packaging, and merchandising.

Although it cannot be quantified, consumption of fresh duck eggs is undoubtedly seasonal in nature and varies by region. Vietnam's per capita consumption is 12 eggs per year. However, in the Delta the estimated per capita duck egg consumption is 24 per year.

PROBLEM AREAS

Although retail prices for poultry and poultry products may be reduced by increasing marketing efficiencies, the case for major marketing reform is questioned, given the relatively low marketing margin currently received by market participants. The commercial poultry industry depends on imported feed grains and, to establish a healthy and viable poultry industry in Vietnam, it will be necessary to produce feed grains domestically in adequate quantities and at reasonable prices. Until this point is reached, the poultry industry is in a precarious position and marketing per se cannot establish a healthy and viable commercial poultry industry. However, any marketing system

is expected to move products from the farms to consumers in an efficient manner, notwithstanding consumers tastes and preferences. The problems affecting improvement of the existing marketing system are:

1. Poorly coordinated market channels through which larger broiler flocks are assembled and distributed to consumers.
2. Need for improvement in the flow of inputs for agricultural production and marketing.
3. Lack of market information flows among market participants.
4. The absence of government poultry marketing regulations to encourage grading, inspection, and minimum handling requirements for poultry products.
5. Limited agricultural economic research needed for decisionmaking.

RECOMMENDATIONS

1. Large scale and efficient broiler operations are not feasible in Vietnam as long as existing marketing practices are followed. It is recommended that a 600 broiler per hour processing plant be constructed near Saigon. It appears the institutional trade and military will provide adequate primary outlets for dressed poultry. Also the concentration of larger producers surrounding Saigon could provide the necessary volume of broilers for this plant.

Reportedly the proposed processing plant will be owned and managed by one of the producer associations. It is further recommended that USAID and the Ministry of Agriculture initiate a joint program to provide training and extension activities in marketing, including promotional activities, for poultry producer associations. The association managing the broiler processing plant should be encouraged to (a) negotiate contracts for its product with existing outlets, including government agencies, since this would provide members with stable outlets for their production, and (b) initiate supply contracts with members to schedule production and insure proper utilization of the processing facility. These actions are certain to improve production efficiency and reduce existing production costs approximately VN\$7 per kilogram. A location study for the proposed plant should be initiated by the Ministry of Agriculture and supported by USAID to insure minimum assembly and distribution costs.

2. The Government of Vietnam and USAID should continue to encourage domestic feed grain production, as this is essential to sustaining a viable poultry industry. The feasibility of establishing an experiment farm to explore techniques unique to Vietnam for improving production and marketing

skills should be determined. For example, local sources of carbohydrates and protein for feeding could be examined to avoid future imports of livestock feed.

The GVN should avoid frequent changes in regulated import levels of agricultural inputs, as it enhances uncertainty in the industry. For example, frequent changes in import levels of poultry breeder stocks causes wide fluctuation in the supply of poultry products. Also, future feed grain requirements related to imported parent stock should be considered before import licenses are issued.

3. The feasibility of establishing a market news service in the Ministry of Agriculture should be examined. The service should provide market information to major cities and rural towns, and exchange price and quantity information for farm products at each level in the market system.

Market information should be transmitted by whichever media are available, and may include market newsletters and daily broadcasts on local radio and T.V. The reported prices and quantities should convey quality and grade differences so producers will be aware of changes in consumer preferences and tastes, and plan their production accordingly. Improved communication would also deter alleged market-sharing practices and collusion.

4. The effectiveness of poultry marketing institutions may be enhanced by government poultry marketing regulations regarding market grades, standard weights and measures, inspection services, and minimum handling requirements. A study should be conducted to analyze the need for and the cost of initiating market regulations, and the likely implications in terms of added costs and returns with respect to producers and existing market participants.

The first priority should be to determine consumer behavior regarding poultry products and the need for market regulations. Unless consumers differentiate a product on the basis of quality, the need for grades may be questionable. Regarding egg processing plants, the market for graded eggs needs to be determined before such plants are established.

Establishing poultry market regulations would improve the products' acceptability in foreign markets.

5. Based on the general results of this study, it has become clear that further investigation and study are needed. The first priority is to improve data collection in Vietnam to determine existing resources in poultry production and marketing, including labor, number of birds, output, and general census data; supply and demand for poultry products; and product prices at each level in the market channel.

A program to periodically evaluate this data is needed and, if feasible, should coincide with 5-year agricultural development plans. Further study and investigation are recommended for these areas: (a) poultry market practices, structure, and costs--this should provide a detailed description of

existing practices at each level in the marketing channel and an analysis of factors influencing distribution and handling costs, including potential poultry processing facilities; (b) production costs for poultry and poultry products, including ducks--an analysis of economic interrelationships between raising ducks and chickens; (c) urban and rural food consumption, including food intake and nutritive value of Vietnamese diets as well as an examination of the likely impact of introducing refrigeration; (d) potential foreign demand for ducks and duck products to determine foreign market prices, current product forms specifications, current suppliers, and transportation facilities; and (e) factors which influence product prices at each market level, including the interrelationships of prices for duck and poultry products.

Closer cooperation between the Government and the National College of Agriculture should be encouraged in the area of agricultural economic research.

APPENDIX I

Data Used in Estimating Annual Costs of Grading and Handling Eggs

Flats

Quantity: 1,400 5x6 plastic, white
Cost : U.S.\$.35 each

The flats are reused and have an expected life of one year.

Building and land

Building size	:	15x15 meters, or 225 square meters	
Construction cost:		VN\$20,000 per square meter; initial cost VN\$4.5 million	
Depreciation	:	10 percent of initial cost	= VN\$ 450,000
Maintenance and improvement	:	2 percent of initial cost	= 90,000
Interest	:	25 percent of average investment (which is 1/2 of initial cost)	= 562,000
Total annual cost for building:			1,102,000

Lot size	:	20x20 meters, or 400 square meters	
Purchase cost	:	VN\$1,000 per square meter; initial cost VN\$ = 400,000	
Interest	:	25 percent of average investment	= VN\$50,000
Converting to U.S.\$	:	Annual cost for building and land = (VN\$1,102,000 + VN\$50,000) = 410	

Refrigeration equipment

Egg room cooling and humidifying units (3), initial cost:		US\$1,385	
Depreciation	:	20 percent of initial cost	= US\$ 277
Maintenance and repair:	:	2 percent of initial cost	= 28
Interest	:	25 percent of average investment	= 173
			US\$ 478

Egg handling equipment

Cleaner-grader with candler; initial cost U.S.\$2,870

Depreciation: = 560

Maintenance and repair: 2 percent of initial cost = 56

Interest: 25 percent of average investment = 350
US\$ 966

Utilities

Electricity: Approximately 3,000 KWH @ VN\$7.3/KWH converted at
VN\$410/US\$ = US\$ 150

Egg handling labor

5 people @ VN\$8,000 per month = VN\$40,000 per month

Fixed salaried employee

VN\$12,000 per month

APPENDIX II

Data Used in Estimating Annual Costs of Poultry Processing and Handling

Crates

Quantity: 4,000
Cost : VN\$100 each

Packaging material

	<u>Quantity</u>	<u>Unit Price</u>
Polyethylene bag	1,750,000	VN\$1/bag
Wax paper	525,000	VN\$.3/sheet

Fixed salaried employees

	<u>Number</u>	<u>Annual Salary VN\$</u>
Director	1	600,000
Personnel Officer	1	300,000
Accountant	1	300,000
Buyer and Seller	1	300,000
Assistant Accountant	1	180,000
Secretary	4	384,000
Plant Manager	1	300,000
Electrician	1	180,000
Refrigeration Mechanic	1	180,000

Variable plant wages

	<u>Number</u>	<u>Annual Salary VN\$</u>
Supervisor	1	216,000
Production workers	20	2,880,000

	<u>Number</u>	<u>Annual Earnings VN\$</u>
Laborer	2	240,000
Driver	1	144,000
Assistant Driver	1	120,000
Guard	1	96,000
Messenger	1	48,000

Building and land

Building area	:	450 square meters	
Construction cost:		VN\$20,000 per square meter; initial cost VN\$9 million	
Depreciation	:	5 percent of initial cost	= VN\$ 450,000
Maintenance and repair	:	3 percent of initial cost	= 270,000
Interest	:	25 percent of average investment (which is 1/2 of initial cost)	= <u>1,125,000</u>
Total annual cost for building:			1,845,000

Lot size	:	2,000 square meters	
Purchase cost	:	VN\$1,000 per square meter; initial cost VN\$2 million	
Interest	:	25 percent of average investment	= VN\$ 250,000

Equipment

2.2 ton refrigerated trucks;
initial cost VN\$20,625,000

Depreciation	:	10 percent of initial cost	= VN\$2,062,500
Maintenance and repair:		5 percent of initial cost	= 1,031,250
Interest	:	25 percent of average investment	= 2,578,125

Electrical and water system;
initial cost VN\$500,000

Depreciation	:	10 percent of initial cost	= VN\$ 50,000
Maintenance and repair:		4 percent of initial cost	= 20,000
Interest	:	25 percent of average investment	= <u>62,500</u>
Total annual equipment cost			5,804,374

Utilities

	<u>Quantity</u>	<u>Unit Price</u>
Electric	146,000 KWH	VN\$7.3/KWH
Water	22,750 cu. meters	19/cu. meter
Gasoline for:		
Plant	10,000 liters	20/liter
Trucks	5,000 liters	22/liter

